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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,193	04/23/2001	Tsutomu Kawano	01246/LH	3939

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EXAMINER	
EDWARDS, PATRICK L	

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 11/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/840,193	KAWANO, TSUTOMU	
	Examiner	Art Unit	
	Patrick L. Edwards	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-9,33 and 34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-9,33 and 34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09-13-2005 has been entered.

Response to Arguments

2. Applicant's arguments filed on 09-13-2005 have been fully considered. A response to these arguments is provided below.

Prior Art Rejections

Summary of Argument:

Applicant alleges that Armato fails to disclose a structure which determines to which of the plurality of different type contours the recognized contour belongs, based on the classification criteria data (remarks pg. 9).

Examiner's Response:

Applicant's arguments are moot in view of the new grounds of rejection provided below.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 2-5, 33, are rejected under 35 U.S.C. 102(e) as being anticipated by Armato, III et al. (USPN 6,335,980).

Regarding claim 33, Armato discloses the following limitations:

An object region extracting section that receives a set of two-dimensionally-arranged radiation image data including radiation image data of the radiographed body part and extracts an object region formed by the radiation image data of the radiographed body part from the set of two-dimensionally-arranged radiation image data.

The entire Armato disclosure is concerned with receiving a two-dimensional radiation image data and extracting an object region therefrom. For example, several of the Figures in Armato show a two-dimensional radiation image (see armato col. 3 lines 13-14) and further show that an object has been extracted from that received image.

a contour recognizing section having classification criteria data for each of the plurality of different contour types, which recognizes a contour of the extracted object region, and determines to which one of the plurality of different contour types the recognized contour belongs based on the classification criteria data.
Armato discloses classification criteria which is used to assign the extracted object region to a number of categories (i.e. contour types). This is shown at col. 5 lines 39-64, and a table of categories is shown in Figure 6 of Armato.

Regarding claim 2, Armato discloses the following limitations:
The radiation image processing apparatus according to claim 33 wherein, the contour recognizing section judges the kind of recognized contour based on a position change of a boundary of the object region
(e.g., at Armato col. 7 lines 12-20: The reference describes judging the kind of recognized contour (in this case it is a decision between sternum and diaphragm) by seeing whether the boundary of the object region is concave (i.e. checking for a position change).).

Regarding claim 3, Armato discloses the following limitations:
a region boundary point detecting section that detects a boundary of the object region.
The Armato reference is directed to detecting a boundary of either the initial lung region contour or the ROI's

a position change amount calculating section that calculates a position change amount of the boundary of the object region from plural region boundary points detected by the region boundary point detecting section
(see e.g. Armato col. 7 lines 46-64: The reference describes calculating x and y position amounts. As was stated before, these position amounts are used to determine the category that a ROI belonged to (see Armato col. 7 lines 12-20).

a contour specifying section that specifies the kind of recognized contour from the position change amount calculated by the position change amount calculating section
(see e.g. Armato col. 7 lines 46-64: The reference describes calculating x and y position amounts. As was stated before, these position amounts are used to determine the category that a ROI belonged to (see Armato col. 7 lines 12-20).

Regarding claim 4, Armato discloses the following limitations:
the radiation image processing apparatus according to claim 3, wherein the position change amount is a distance between neighboring region boundary points

(see e.g. Armato col. 7 lines 47-53: The reference describes comparing x and y coordinates of each boundary point with x and y coordinates of neighboring boundary points.

Regarding claim 5, Armato discloses the following limitations:

the radiation image processing apparatus according to claim 3, wherein the position change amount is an amount of change in coordinates between neighboring region boundary points in one or both of the horizontal and vertical directions.

(see the above discussion with respect to claim 4. The cited passage also meets the limitations of claim 5 because we are comparing an amount of change in both the horizontal and vertical directions.

Regarding claim 34, Armato discloses the following limitation:

the radiation image processing apparatus of claim 33, wherein the contour recognizing section provides a feature amount to the recognized contour in accordance with the determined one of the plurality of different contour types

Regarding claim 8, Armato discloses the following limitations:

the radiation image processing apparatus according to claim 33, wherein the body part of the object is recognized by using the feature amount obtained in the contour recognizing section

(see e.g. Figure 6 of Armato and corresponding discussion throughout the disclosure. The "feature amount" can be met by any of a number of identifiers shown in this figure, including category number, ROI size, or threshold value.).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Armato et al. as applied to claim 33 above, and further in view of Yasui et al. (USPN 6,493,458 B2). The arguments as to the relevance of Armato as applied in claim 1 above are incorporated herein.

With regard to claims 6 and 7, Armato discloses a radiation image processing apparatus with a contour recognizing means.

Armato also discloses a region boundary point detecting means that detects a boundary of the object region (see the above discussion under 102).

Armato fails to expressly disclose that the contour recognizing means uses local region widths of the object region. Yasui, however, discloses a contour recognizing means (Yasui col. 8 line 4) which uses local region widths of the object region (Yasui col. 22 lines 26-33 with Figure 29).

Yasui further discloses a contour specifying means that specifies the kind of recognized contour from the region widths calculated by the region width calculating means (Yasui col. 22 lines 26-33 with Figure 29).
It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Armato's contour recognizing means by determining the borders of the object region (and hence the contour) by calculating the width of each region on every scanning line as taught by Yasui. Such a modification would have allowed for an accurate, reliable method of determining the boundary (i.e. contour) of a localized object region (Yasui col. 2 line 61 – col. 3 line 10).

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Armato as applied to claim 33 above, and further in view of Shinbata (USPN 6,594,380 B2). The arguments as to the relevance of Armato as applied to claim 1 above are incorporated herein.

With regard to claim 9, The Armato reference is insufficient to meet the limitations, because it fails to disclose a radiographing orientation judging means. Shinbata, however, discloses a radiographing orientation judging means for judging a radiographic orientation for an object from the contour based on the feature amount (Shinbata col. 5 lines 31-59: The Shinbata reference discloses determining the radiographic posture (which is analogous to the radiographic orientation recited in the claim) of an object based on the profile (i.e. contour) of a portion of the image. The radiographic posture is determined based on a feature amount.

It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Armato's radiation image processing apparatus by determing the radiographic orientation of extracted objects as taught by Shinbata. Such a modification would have allowed for a system that could automatically detect the posture (orientation) of the subject, and would no longer require this information to be input manually (Shinbata col. 1 lines 39-41). This would have made for a faster system that also avoided unnecessary input errors.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Cios et al. "A Novel Algorithm for Classificiation of SPECT Images of a Human Heart"
- Young et al. (USPN 6,625,303) discloses method and apparatus for locating and identifying patterns in radiographic images

- Bankman et al. (USPN 5,574,799) discloses automatic detection of microcalcification clusters in mammograms

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick L Edwards whose telephone number is (571) 272-7390. The examiner can normally be reached on 8:30am - 5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joe Mancuso can be reached on (571) 272-7695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick L Edwards Art Unit 2621

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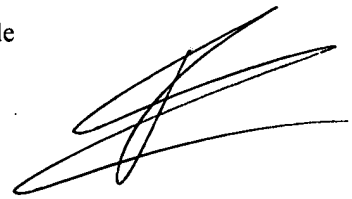

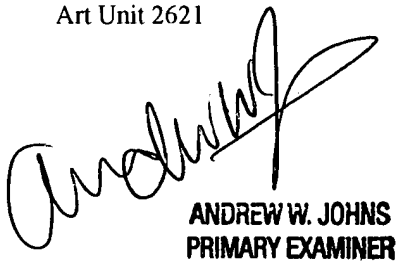

ANDREW W. JOHNS
PRIMARY EXAMINER